

INTERNATIONAL SEARCH REPORT

PCT/JP2004/019824

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 B21D43/05 B21D43/10

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B21D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 930 110 A (MUELLER WEINGARTEN AG) 21 July 1999 (1999-07-21) paragraphs '0011! - '0015!; figures	1-11
X	US 5 520 502 A (LILJENGREN ET AL) 28 May 1996 (1996-05-28) abstract; figures	1-11
X	PATENT ABSTRACTS OF JAPAN vol. 018, no. 272 (M-1610), 24 May 1994 (1994-05-24) -& JP 06 047465 A (NISSAN MOTOR CO LTD), 22 February 1994 (1994-02-22) cited in the application	1
A	abstract ----- -/--	2-11

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *&* document member of the same patent family

Date of the actual completion of the international search

29 April 2005

Date of mailing of the international search report

20/05/2005

Name and mailing address of the ISA

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INTERNATIONAL SEARCH REPORT

PCT/JP2004/019824

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 383 348 A (MICHAEL ET AL) 24 January 1995 (1995-01-24)	1
A	column 2, line 67 - column 3, line 9; figure 1	2-11
A	----- PATENT ABSTRACTS OF JAPAN vol. 2003, no. 02, 5 February 2003 (2003-02-05) -& JP 2002 307116 A (KOMATSU LTD), 22 October 2002 (2002-10-22) cited in the application abstract -----	1-11

INTERNATIONAL SEARCH REPORT

Information on patent family members

PCT/JP2004/019824

Patent document cited in search report		Publication date		Patent family member(s)	Publication date
EP 0930110	A	21-07-1999	DE	19801731 A1	22-07-1999
			DE	59808260 D1	12-06-2003
			EP	0930110 A2	21-07-1999
			ES	2199404 T3	16-02-2004
US 5520502	A	28-05-1996	SE	466246 B	20-01-1992
			AU	655619 B2	05-01-1995
			AU	9088291 A	08-07-1992
			CA	2098090 A1	15-06-1992
			CZ	9301130 A3	15-12-1993
			CZ	282897 B6	12-11-1997
			DE	69119786 D1	27-06-1996
			DE	69119786 T2	26-09-1996
			EP	0574397 A1	22-12-1993
			ES	2087511 T3	16-07-1996
			HU	63806 A2	28-10-1993
			JP	6503272 T	14-04-1994
			KR	163060 B1	15-01-1999
			RU	2102239 C1	20-01-1998
			SE	9004006 A	20-01-1992
			WO	9210360 A1	25-06-1992
			SK	60793 A3	09-09-1993
			US	5909997 A	08-06-1999
JP 06047465	A	22-02-1994	JP	2785597 B2	13-08-1998
US 5383348	A	24-01-1995	DE	4237313 A1	11-05-1994
			CZ	9302343 A3	18-05-1994
			DE	59309670 D1	05-08-1999
			EP	0600254 A1	08-06-1994
			ES	2135435 T3	01-11-1999
JP 2002307116	A	22-10-2002	DE	10215198 A1	14-11-2002
			US	2002144533 A1	10-10-2002

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY



(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 04 MAY 2006

WIPO

PCT

Applicant's or agent's file reference F-901-P	FOR FURTHER ACTION		See Form PCT/PEA416
International application No. PCT/JP2004/019824	International filing date (day/month/year) 27.12.2004	Priority date (day/month/year) 16.01.2004	
International Patent Classification (IPC) or national classification and IPC INV. B21D43/05 B21D43/10			
Applicant TOYOTA JIDOSHA KABUSHIKI KAISHA et al.			
<p>1. This report is the International preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> sent to the applicant and to the International Bureau a total of 2 sheets, as follows:</p> <p><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>			
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the report</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input checked="" type="checkbox"/> Box No. VIII Certain observations on the international application</p>			
Date of submission of the demand 09.11.2005		Date of completion of this report 03.05.2006	
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized officer Meritano, L Telephone No. +49 89 2399-7311 	

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/JP2004/019824

Box No. I Basis of the report

1. With regard to the **language**, this report is based on

- ☒ the international application in the language in which it was filed
- ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of:
 - ☐ international search (under Rules 12.3(a) and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4(a))
 - ☐ international preliminary examination (under Rules 55.2(a) and/or 55.3(a))

2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*

Description, Pages

1-20 as originally filed

Claims, Numbers

1-11 received on 11.11.2005 with letter of 11.11.2005

Drawings, Sheets

1/6-6/6 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/JP2004/019824

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	
	No: Claims	1-11
Inventive step (IS)	Yes: Claims	
	No: Claims	1-11
Industrial applicability (IA)	Yes: Claims	1-11
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

**INTERNATIONAL PRELIMINARY
REPORT ON PATENTABILITY
(SEPARATE SHEET)**

International application No.

PCT/JP2004/019824

Re Item VIII

Certain observations on the international application

Re Item V

**Reasoned statement with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

1. The subject-matter of claim 1 is **unclear**, contrary to **Art. 6 PCT**.
 - Insofar as the meaning of the word "tandem press" can be understood, with this term it is meant the **single press**, in the case that it is combined in line with other similar presses. According to the application, tandem presses should be different from transfer presses, wherein the stations share a common bed. However, the prior art discloses modular transfer presses where the single stations are constituted by separate presses: see for instance **US-A- 5 383 348 (D4)**, whereby each press has its own bed (6) and uprights (4).
 - It is also unclear why there are "plural tandem presses" (i.e. possibly more than two) but only a single work conveying apparatus, between two of said presses. In practice, comparing also with the drawings which show merely two presses, it is unclear whether the work conveying apparatus transfers the work (a) from one press to the other of the pair (tandem) of presses or (b) from (each press of) the upstream pair of presses to the downstream pair. By comparing the text of the application with the figures, it cannot be understood which is the overall feeding direction in the pressing line: for instance, looking at figure 2, from the text it would seem that the line comprises more presses than the two (10 and 20) shown. Where should be located these other presses in figure 2? above and/or below or on the left and /or the right?
2. Notwithstanding the above-mentioned lack of clarity, the subject-matter of claim 1 appears to be known from the prior art.

EP-A-0 930 110 (D1) discloses

a tandem pressing apparatus comprising:

a tandem pressing line constituted by plural tandem presses (1, 2) disposed side by side, each of the presses including a bed, uprights and a slide (fig. 1);
a work conveying apparatus (16) including a main member (20, 26, 21, 22) and an arm portion (25) provided at a portion located inside the uprights of the two adjacent tandem presses and not interfering with the slide (7), the arm member (25) being movable between a position to enter into and retract from an upstream (tandem) press, and a position to enter into and retract from a downstream (tandem) press (see figures) for transferring the work having been pressed by the upstream press to the downstream press.

Presses having different work conveying apparatuses are at least equivalent to the claimed apparatus, see **US-A-5 520 502 (D2)**, and the cited **JP-A-06047465 (D3)**.

3. The dependent claims do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and inventive step.

- Claims 2 to 4 regard the position of the "main member" of the conveying apparatus between two uprights of adjacent presses (claim 2) outside the contour of the slide, (cl. 3) and fixed to the upright at one side (claim 4), which must be the case of **D1**.
- Claims 5 to 7 give some vague details relating still to the position of the "main member", which is said to be somehow slidable along a "guiding member". Considering in **D1** as main member the part 26 sliding on guides (21, 22), no substantial difference can be seen between the conveying apparatus of **D1** and the claimed one.

The solution of claim 7 appears to correspond to the construction of **D1**, which foresees the case of a pair of conveying apparatuses (col. 3, lines 52-58), each one on one side of the work.

- Claims 8 gives a vague indication about a "multi-joint arm" which appears to comprise the constructions of **D1** and **D2**.

Claims 9 and 10 regard merely the position of the main member or guiding member on the upright, which does not say anything new and inventive over the mentioned prior art.

- Any of these known apparatuses may be considered a "robot controlled by a CPU",

**INTERNATIONAL PRELIMINARY
REPORT ON PATENTABILITY
(SEPARATE SHEET)**

International application No.

PCT/JP2004/019824

as said in claim 11.

CLAIMS

1. (Amended) A tandem pressing apparatus comprising a tandem pressing line constructed by plural tandem presses (10, 20) disposed side by side, and a work conveying apparatus (50; 70) for conveying a work (W) between the adjacent tandem presses,

characterized by:

each of the tandem presses (10, 20) of the tandem pressing line including a bed (11, 21), plural uprights (13a to 13d, 23a to 23d) studded on the bed, and a slide (15, 25) supported on the uprights to be ascended or descended;

the work conveying apparatus including a main member and an arm portion, the main member (35L, 35R; 62, 63) being provided at a portion located inside the uprights of the adjacent one pair tandem presses constructing the tandem pressing line and not interfering with the slide,

the arm member (40L, 40R; 65) being movable between a position to enter into and retract from an upstream tandem press (10), and a position to enter into and retract from a downstream tandem press (20), for transferring the work having been pressed by the upstream tandem press to the downstream tandem press.

2. (Amended) A tandem pressing apparatus according to claim 1, wherein the main member (62, 63) is disposed in a space formed between the upright (13b) of the upstream tandem press and the upright (23a) of the downstream tandem press adjacent to the upstream tandem press, and including a space existed inside the upstream upright and the downstream upright.

3. (Amended) A tandem pressing apparatus according to claim 2, wherein the main member (62, 63) is positioned outside a contour of the slide, in the plane view.

4. (Amended) A tandem pressing apparatus according to claim 3, wherein the main member (62, 63) is fixed to the upright (13b, 23a) located at one side relative to the conveying direction of the work.

5. (Amended) A tandem pressing apparatus according to claim 1, wherein the main member (35L, 35R) is slidably held by a guiding member provided

inside the upright (13b, 13d) of the upstream tandem press and the upright (23a, 23c) of the downstream tandem press.

6. (Amended) A tandem pressing apparatus according to claim 5, wherein the main member (35L, 35R), moved to the upstream tandem press or the downstream tandem press, is positioned outside a contour of the slide.

7. (Amended) A tandem pressing apparatus according to claim 6, wherein the guiding member (30L, 30R) is fixed to the uprights (13b, 23a, 13d, 23c) located at both sides of the slide in a direction orthogonal to the conveying direction of the work.

8. (Amended) A tandem pressing apparatus according to claim 2 or 5, wherein the arm member (40L, 40R; 65) is a multi-joint arm including two or more joints (42L, 42R, 44L, 44R; 66, 67).

9. (Amended) A tandem pressing apparatus according to claim 2, wherein the main member (62, 63) is fixed to at an intermediate portion of the upright (13b, 23a) in the height direction, and the arm member is extended laterally from the main member.

10. (Amended) A tandem pressing apparatus according to claim 5, wherein the guiding member (30L, 30R) is fixed to at an intermediate portion of the upright (13b, 23a, 13d, 23c) in the height direction, and the arm member (35L, 35R) is extended downwardly from the main member.

11. (Amended) A tandem pressing apparatus according to claim 2 or 5, wherein said work conveying apparatus (50; 70) is a conveying robot controlled by a CPU.

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

REC'D 18 MAY 2005

PCT

W/O

PCT

To:

see form PCT/ISA/220

28/7

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/JP2004/019824

International filing date (day/month/year)
27.12.2004

Priority date (day/month/year)
16.01.2004

International Patent Classification (IPC) or both national classification and IPC
B21D43/05, B21D43/10

Applicant
TOYOTA JIDOSHA KABUSHIKI KAISHA

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☒ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/JP2004/019824

Box No. 1 Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
☐ a sequence listing
☐ table(s) related to the sequence listing
 - b. format of material:
☐ in written format
☐ in computer readable form
 - c. time of filing/furnishing:
☐ contained in the international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/JP2004/019824

Box No. V Reasoned statement under Rule 43b/s.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	
	No: Claims	1-11
Inventive step (IS)	Yes: Claims	
	No: Claims	1-11
Industrial applicability (IA)	Yes: Claims	1-11
	No: Claims	

2. Citations and explanations

see separate sheet

Box No. VII Certain defects in the International application

The following defects in the form or contents of the international application have been noted:

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Re Item VIII

Certain observations on the international application

Re Item V

**Reasoned statement with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

1. The subject-matter of claim 1 is unclear, contrary to Art. 6 PCT.
 - Insofar as the meaning of the word "tandem press" can be understood, with this term it is meant the single press, in the case that it is combined in line with other similar presses. According to the application, tandem presses should be different from transfer presses, wherein the stations share a common bed. However, the prior art discloses modular transfer presses where the single stations are constituted by separate presses: see for instance **US-A- 5 383 348 (D4)**, whereby each press has its own bed (6) and uprights (4).
 - It is also unclear why there are "plural tandem presses" (i.e. possibly more than two) but only a single work conveying apparatus, between two of said presses.
2. Notwithstanding the above-mentioned lack of clarity, the subject-matter of claim 1 appears to be known from the prior art.

EP-A-0 930 110 (D1) discloses

a tandem pressing apparatus comprising:

a tandem pressing line constituted by plural tandem presses (1, 2) disposed side by side, each of the presses including a bed, uprights and a slide (fig. 1);

a work conveying apparatus (16) including a main member (20, 26, 21, 22) and an arm portion (25) provided at a portion located inside the uprights of the two adjacent tandem presses and not interfering with the slide (7), the arm member (25) being held on the main member to transfer the work having been pressed by the upstream press to the downstream press.

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING
AUTHORITY (SEPARATE SHEET)**

International application No.

PCT/JP2004/019824

Presses having different work conveying apparatuses fall under the given definition, see **US-A-5 520 502 (D2)**, and the cited **JP-A-06047465 (D3)**.

3. The dependent claims do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and inventive step.
 - Claims 2 to 4 regard the position of the "main member" of the conveying apparatus between two uprights of adjacent presses (claim 2) outside the contour of the slide, (cl. 3) and fixed to the upright at one side (claim 4), which must be the case of **D1**.
 - Claims 5 to 7 give some vague details relating still to the position of the "main member", which is said to be somehow slidable along a "guiding member". Considering in **D1** as main member the part 26 sliding on guides (21, 22), no substantial difference can be seen between the conveying apparatus of **D1** and the claimed one.

It is unclear what is meant in claim 7 by "fixed at both sides of the slide relative to the conveying direction". **D1** foresees the case of a pair of conveying apparatuses (col. 3, line 52-58), each one on one side of the work, thus appears to anticipate the claimed solution.
 - Claims 8 gives a vague indication about a "multi-joint arm" which appears to comprise the constructions of **D1** and **D2**.

Claims 9 and 10 regard merely the position of the main member or guiding member on the upright, which does not say anything new and inventive over the mentioned prior art.
 - Any of these known apparatuses may be considered a "robot controlled by a CPU", as said in claim 11.
4. The subject-matter of the claims should be clarified by adding more details on the construction of the conveying apparatus.

Re Item VII

Certain defects in the international application

1. Independent claim 1 is not in the two-part form in accordance with Rule 6.3(b) PCT.

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING
AUTHORITY (SEPARATE SHEET)**

International application No.

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2. The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).